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AMPP NEWSLETTER

MAY 2020

A MESSAGE FROM STACY MCLAUGHLIN, DIVISION LEADER

I am excited to introduce the second 2020 issue of Actinide Materials Processing and Power Division's newsletter, with a focus on "excellence in Plutonium missions." AMPP Division not only supports the 2020 Laboratory Agenda item 1, Excellence in Nuclear Security, but additionally directly supports Laboratory Agenda item 2, Excellence in Mission-Focused Science Technology & Engineering, focusing on sustaining and enhancing LANL's science base. This issue highlights the diverse efforts of personnel in AMPP Division to enhance science, technology, and engineering (ST&E) at the Laboratory. As we reflect on work at the Laboratory, mostly from our homes due to COVID-19, it is gratifying to see the important, diverse contributions to ST&E across AMPP Division.

As the COVID-19 situation evolves, LANL and ALDWP continue to adjust our work practices in a manner that keeps employee health and safety at the forefront while maintaining the needed support for our missions. As a result, we will be changing how we review and approve work to ensure proper attention is given to social distancing. In this ever-changing environment, I encourage all of you to stay up to date by reviewing all communications and applicable procedure/policy updates. Some great resources for information include the LANL COVID-19 Hub, AMPP-DO webpage, and the TA-55 Standing Orders. As always, please reach out to your supervisor if you have questions about any of these changes.

As we continue dealing with the COVID-19 pandemic, I want to thank everyone for their patience and efforts to deal with this "new normal," in terms of both those tied to Mission Essential work on-site as well as those members of our team

working from home. I know this is not easy. Hang in there—we will get through this together!

To all of you, for all you have done in support of our vital national security mission, I want to express my sincere thanks and appreciation. Keep up the great work!

-Stacy

Congrats!

LANL SERVICE ANNIVERSARIES

Joshua Narlesky, AMPP-4 - 20 years
Rodney Zamora, AMPP-1 - 15 years
Krystal Mondragon, AMPP-DO - 10 years

MEET SETH JOHNSON, AMPP'S NEW DEPUTY DIVISION LEADER

Seth Johnson stepped into the role of Deputy Division Leader of AMPP in March of this year. In his prior years of work at TA-55, he held various roles as a safety basis analyst, cognizant system engineer, implementation manager, and safety basis group leader. His LANL career started, in 2005, working for the construction and maintenance subcontractor, KSL. We asked Seth a little bit about himself so you can get to know him as your new Deputy Division Leader!

What's your educational background?
I have a Bachelor's of Science in Civil Engineering and a Master of Project Management Degree. Both have given me the building blocks to be able to understand our work and be successful in the long run.

What are some of your goals for AMPP?
My goal for any organization that I am a part of is to work within the structure and requirements of the role, while improving the manner in which we go about meeting those requirements. To me, this means meeting the safety and security requirements of the nuclear environment while finding new ways to gain efficiencies.

What do you like to do when you're not at work?
I spend a lot of time with my family (a LOT during our current state of affairs!), work on the house, workout, and enjoy our four dogs.

What's one thing most AMPP employees may not know about you?
Not too many people know I was born and raised in Alaska, and no, I can't see Russia from my house.

What's been a highlight of your new role so far?
AMPP has such a great scope of work and people performing that work. I'm learning a huge amount and everyone has been helpful in bringing me up to speed. I really appreciate the patience everyone has shown me, and I'm looking forward to getting to know more AMPP personnel and learn their processes.

EMPLOYEE SPOTLIGHT: JOSH ROYBAL

Josh Roybal has been at LANL for eight years, the last three of those working at TA-55.

Josh started at the Lab as an undergraduate student and continued on to graduate research assistant, prior to which he primarily worked in the petroleum industry. He has a bachelor's degree in chemical engineering from New Mexico State University and a master's in the same from Cornell University. At Cornell, his thesis involved work you might not expect.

"My masters thesis concentrated on the interface of chemical and biomedical engineering," Josh explains. "The research contributed largely to the development of non-surgical brain tumor treatment, specifically ultrasound enhanced drug delivery, allowing for treatment of brain tumors unreachable by surgical means."

When he's not at work, Josh has a lot of active hobbies, including Motocross, snowboarding, hockey, paintball, and modifying automobiles.
Currently, Josh is an R&D Engineer, focusing on Aqueous Nitrate Readiness, Plutonium Sustainment, and Material Recovery & Recycle while also working as an Electrical Safety Officer and NCR Coordinator.

"I really love the hands-on aspect of the job as well as the significant impact we make with regard to national security and global stability."

MIS TEAM SECURES MATERIALS WITH SCIENCE

AMPP employees have been hard at work solving the case of unexpected corrosion in plutonium-bearing containers. Team members of the Materials Identification & Surveillance (MIS) Program, a multi-disciplinary project with scientists from the Actinide Material Processing & Power (AMPP) Division, discovered the cause and developed a plan to ensure the safety and security of the valuable materials, and the people who work with them.

The art of surveillance

Crucial to the plutonium pit mission centered at TA-55 is something many don't think of – excess materials. The processes that take place at the plutonium facility and other DOE sites result in plutonium-bearing materials that are a valuable surplus, but not immediately usable. That plutonium is packaged in containers designed to safely store plutonium metals and oxide for up to 50 years for use in future missions.

When a team at Savannah River Site found corrosion in both the innermost and middle layers of the 3-layer nested containers, it revealed an issue that could compromise the 50-year life storage of the containers, and presented a complex science problem that needed to be solved.

Identifying the unknown

The LANL MIS team, which includes scientists, analysts and technicians, spent the past few years investigating the corrosion before discovering the cause — a radiological process generating corrosive gases within the containers. The team then developed a plan that involved surveillance, shelf-life testing, and accelerated aging tests to help prevent this corrosion in the future.

These processes will be crucial to ensuring the safe storage of plutonium materials.

"Understanding chloride gas generation and how it changes with time is vital to knowing whether the storage of these materials will be safe for the long term," Daniel Rios, MIS Scientist, said. "This gives us confidence that we can trust the safety of these containers long into the future."

'A science-driven safety basis'

The MIS team have made a scientific discovery that will, according to Rios' write-up in the Actinide Research Quarterly, "underpin a science-driven safety basis for effectively monitoring and managing long-term storage of these materials." This new information will offer safety guidance not only within the Lab, but to facilities around the country and the world that work with radioactive materials.

Thanks to these supporting organizations:

Computer and Statistical Sciences (CCS) Division
Chemistry Division
SIGMA Division

Corrosion observations at destructive examination (DE) of some 3013 containers packaged with hydrated chloride-bearing plutonium oxide. Headspace and contact region corrosion was observed on the inner (left) and convenience (right) containers, respectively.

ACTINIDE OPERATIONS MENTORING PROGRAM

Mentoring is a mutually beneficial relationship between two people with the goal of professional and personal development.

Actinide Operations is establishing a mentoring program to support the professional growth of our employees. This program is an opportunity for mentees to learn from the experience of others, develop knowledge and skills, improve communication, gain new perspectives, build networks, and expand career opportunities. Additionally, it is designed to develop leadership talent, both technically and in preparation for potential additional leadership opportunities (both in program and line positions).

Program Overview

The AO mentoring program is designed as a mentee driven program. This program is being offered to many of the divisions that work at TA-55, which should allow for cross-functional mentoring relationships. The mentees and mentors will self-nominate via submission of a questionnaire, but mentees must first receive permission from their direct manager. The program team will review questionnaires, and mentee/mentor pairs will be matched up based on strengths, weaknesses, and career aspirations. All selected mentors and mentees are expected to:

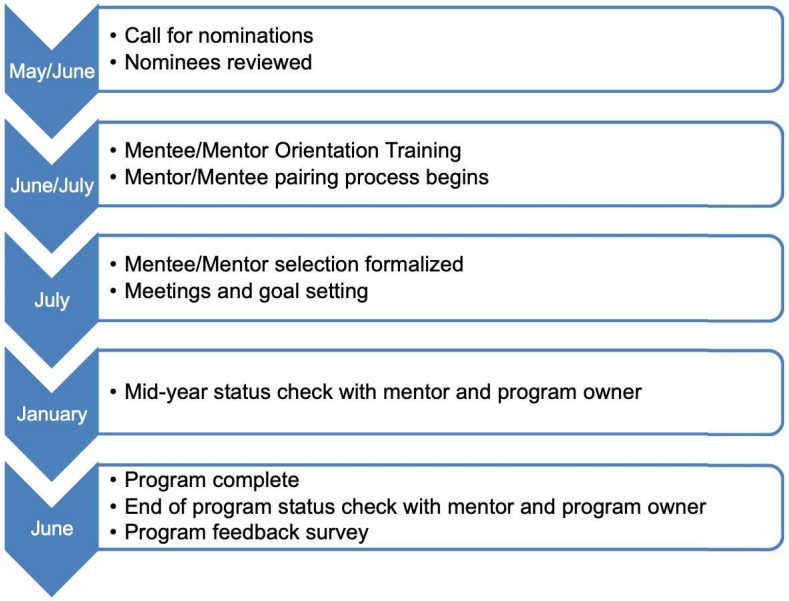
- Attend an orientation training
- Commit to meeting with each other 2 times per month
- Support goal formation through the use of an Individual Development Plan
- Provide program feedback

Program Implementation

The AO mentoring program will take a phased approach to implementation to allow us to learn as we grow. The first phase will be open to mentees in the scientist and engineer series who are looking to advance in their current career path or shift over to another (e.g., TPM or Management). Mentors can come from a variety of roles and backgrounds (e.g., TPM 3/4, FLM, Scientist 3/4, or Engineer 3/4).

2020 TIMELINE

**Timeline subject to change due to COVID-19 impacts.*



If you have questions, please feel free to reach out to the program team at AO_mentoring@lanl.gov.

ALIENS, PIE, AND MOON ROCKS: CLEANING OUT CLOSETS IN PF-4

Materials that have long been in storage are being sorted through at TA-55, and some unusual discoveries are deserving of nicknames. Aliens, fruit roll-ups, lemon meringue and moon rocks are among the funny finds, to name a few. Some of these "legacy materials" have been stored for up to decades, some in nonstandard containers, some, like these nicknamed discoveries, that have morphed into strange and hard-to-identify forms. It's the massive task of the Material Recovery and Recycle (MR&R) group and the Repack, Consolidation and Discard (RCD) team within this group. The MR&R group supports MR&R Defense Program within the Actinide Material Processing and Power (AMPP) Division, to identify their usefulness for the national security mission and determine whether materials and residues should be recycled, stored, or discarded.

A long history of vault use

While the MR&R program officially began in 2003, its work scope involves dealing with materials that date back to the 70s and 80s. Then, LANL conducted experiments to evaluate the performance of nuclear weapons, resulting in contaminated steel vessels that were used to contain the blasts. Many of these vessels have been in storage since then, waiting to be recycled or moved for future use.

But when the Chemistry & Metallurgy Research Replacement (CMRR) facility was deferred by DOE in 2012, the massive storage vault for nuclear materials that was included in its layout was lost as well. Suddenly, increasing vault availability became an urgent need as production began to ramp up for the pit mission.

For many of the professionals in the MR&R program, it was time to shift gears. Without the incoming storage area of the cancelled CMRR building, it was necessary and urgent to clear out the vaults in PF-4, which were full of low value residues and by-products, and repurpose the space for the valuable metals required for pit production.

A few of the MR&R team's favorite material discoveries from the vault work-off (clockwise from top left): "Lemon Meringue," "The Moon Rock," "Fruit Roll-ups," and finally, "The Alien."

Cleaning out the closets

In 2013, the Accelerated Vault Work-Off project began to make more efficient and effective use of the current vault with a significant focus on increasing worker safety. By removing non-standard containers and disposing of materials, spaces that required respirators and other time-consuming protective equipment would be more accessible for day use, while also lowering dose rates to workers.

But developing the spaces and equipment needed for the processing and recycling of these materials is also a major undertaking. Currently, the processes within the MR&R program -- material moves, splits, repackaging, furnace operations, material discards, and more -- occur all over the 160,000 square feet of PF-4. A large project is underway to help consolidate the processes into one room and expand the program's capability. The equipment upgrades and installation is a project that on its own will last about three years. Its result will increase efficiency of the MR&R program as a whole, and increase the amount of material that can be processed at once.

Useful vaults = successful mission

As the combined work of outfitting workspaces and clearing out the vault continues, the ability of the AMPP Division to accept residues coming out of the pit production program will continually increase just in time to meet mission goals. The ideal end-point? For the PF-4 vault to store only the highest quality, most necessary metals and oxides, in safe and standardized containers. This will reduce worker risk and enhance the capability of the program at large, while ensuring the vaults are no longer home to any aliens.

GETTING WORK DONE AMIDST COVID-19 PRECAUTIONS

by Cresta Bateman

The COVID-19 pandemic has changed many norms in the world and at LANL. During the rapid transition of sending many to work from home in March, a few programs were deemed mission critical, with the expectation to continue driving their missions forward. One of those essential programs is AMPP-1: Heat Source Technologies.

Some programs never left

AMPP-1 continued their work nearly uninterrupted as many others made the mandatory transition to work remotely. The group works on the production line producing heat sources from plutonium-238, which is an essential mission for National Security. This group is comprised of nearly 90 employees.

It isn't business as usual

While this important program is still moving forward to meet milestones, the way the mission is accomplished has changed. The group quickly refocused how it conducted work by bringing only the critical people on-site when needed for specific parts of production. On any given day, roughly half of the group is working from home while the other half is working on-site.

"We bring people in to perform their necessary production process, and once they are done, they return to work from home," Sam Harwood, First Line Manager for the Welding Team, said. "Our people are extremely mission focused during this time, they get in, get the job done, and get out."

Planning is important, but communication is key

In order to predict a dependent linear production line, coordinate support organizations, and ensure the right people are on site at the right time, communication within the group and across support organizations is paramount. But despite challenges, the group successfully synchronized schedules and planning across their six internal teams and fifteen external support organizations through a variety of daily communications. "It's been a challenge for us to schedule our 'day-to-day', for example, when we'll work from home vs. when we'll be needed in PF-4 for sample analysis," Nell Carver, a scientist on the Pu-238 Analytical Chemistry Team, said. "It's frustrating when things change so often, but we've been up to the challenge and our team has used this as an opportunity to improve our skills for communication, patience and being flexible."

Keven Castillo Quintana works on manufacturing heat sources in PF-4.

Stronger together

The group has bonded through adversity, and is proud of their contributions. It's common to see employees regularly checking on each other when working from home, and those on site are considerate for each other by taking precautions to minimize the COVID-19 risk to others. And they're still trying to celebrate normal events together (from a distance) such as birthdays, hiring new employees, and even welcoming a new baby to the world. But all of this is not without some personal sacrifice. "We have many employees that make personal sacrifices to make sure they are on site to meet the mission. For example, single parents and dual mission essential parents," Matthew McGovern, First Line Manager for the Metallography, Surveillance, and Characterization team, said. "We recognize that and we are grateful to for their selfless commitment to the mission."

Mission First, People Always

"Our focus from day one and always is keeping our people safe, but we do have an important mission. We have to balance those two priorities." Jane Lloyd, AMPP-1 Group Leader, said. The focus to ensure people minimize their time on site while maximizing production output seems like the new normal. Although many employees talk about hoping everything returns to normal sooner, it is perhaps best stated by Allen Arellano, Lead Tech on the Welding team in AMPP-1: "Being essential in this time is an encouraging reminder of how important our work is for our nation. While there are new challenges, the mission remains the same. We are doing our best to work within the new COVID-19 guidelines and not neglecting the hazards that previously existed."